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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,092	06/18/1999	MICHAEL TEWES	TEWESETAL	2371

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 02/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/319,092

Applicant(s)

TEWES ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2002 & 06 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-33 and 35-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-33 and 35-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 17. 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. The request for a continued prosecution application (CPA) under 37 CFR 1.53(d) filed on 6 December 2002 is acknowledged. 37 CFR 1.53(d)(1) was amended to provide that the prior application of a CPA must be: (1) a utility or plant application that was filed under 35 U.S.C. 111(a) before May 29, 2000, (2) a design application, or (3) the national stage of an international application that was filed under 35 U.S.C. 363 before May 29, 2000. See *Changes to Application Examination and Provisional Application Practice*, interim rule, 65 *Fed. Reg.* 14865, 14872 (Mar. 20, 2000), 1233 *Off. Gaz. Pat. Office* 47, 52 (Apr. 11, 2000). Since a CPA of this application is not permitted under 37 CFR 1.53(d)(1), the improper request for a CPA is being treated as a request for continued examination of this application under 37 CFR 1.114. See *id.* at 14866, 1233 *Off. Gaz. Pat. Office* at 48.

Information Disclosure Statement

2. The information disclosure statement filed 28 October 2002 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication (*i.e.*, History of Leica Confocal Microscope Systems and Handbook of Confocal Microscopy) or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but some of the information referred to therein has not been considered.

Further, the information disclosure statement filed 28 October 2002 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because each publication (*i.e.*, Handbook of Confocal Microscopy) listed in an information disclosure statement must be identified by publisher, author (if any), title, relevant pages of the publication, date, and place of publication (the place of publication refers to the name of the journal, magazine, or other publication in which the information being submitted was published). It has been placed in the application file, but some of the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing. That is, the country for application number 196 49 605.5 should be Germany and not PCT.

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Drawings

4. The corrected or substitute drawings were received on 6 December 2002. These drawings are unacceptable. The corrected or substitute drawings are objected to because:

- (a) in Fig. 2, "cross section I-I" (see brief description of Fig. 3 on pg. 9) is missing;
- (b) in Fig. 2, "10a" does not point to the focus (first paragraph on pg. 11);
- (c) in Fig. 2, "10" does not point to the pinhole (first paragraph on pg. 11); and
- (d) reference character "26" has been used to designate sides (last paragraph on pg. 12), conical lateral surfaces (first paragraph on pg. 13), and filter (second paragraph on pg. 13) and thus fails to comply with 37 CFR 1.84(p)(4).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. It should be noted that the specification discloses (fifth paragraph on pg. 10 and Fig. 2) that "On a connection identified with the reference number 5, there is a flange connection 6 to which it is possible to attach an optical waveguide not illustrated in detail, by means of which a stimulating light generated by a laser can be coupled into the module 1".

6. Claims 22, 42, and 43 are objected to because of the following informalities:

- (a) in claim 22, "disposed within said support body" on line 11 should probably be --attached to said coupling connection--;

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- (b) in claim 42, "disposed within said support body" on line 7 should probably be --attached to said coupling connection--;
- (c) in claim 43, "disposed within said support body" on line 7 should probably be --attached to said coupling connection--; and
- (d) in claim 43, "said fiber optic array" on line 11 (there is insufficient antecedent basis for this limitation in the claim) should probably be --said fiber optic waveguide--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 32, 33, and 41-43 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In regard to claims 32 and 33, it should be noted that the specification only disclose (last paragraph on pg. 5; Fig. 2) that the at least one optical unit (14) is preferably arrayed on a receptacle holder (15) that can be inserted removably in the support body (4). Claim 32 recites the limitation of said at least one optical unit is removably insertable within a receptacle holder which was not described in the specification. Thus it is suggested that "removably insertable within a receptacle

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holder" on line 4 in claim 32 should probably be --arrayed on a receptacle holder that is removably inserted within said support body-- (and it should be noted that claims 32 and 33 without new matter would probably be rejected on the same grounds as claim 28).

Claim 41 recites the limitation that the microscope contains a fluorescence spectroscopy module which was not described in the specification.

In regard to claim 42 and 43, it should be noted that the specification only disclose (Figs. 1 and 2) that laser light coupled in from flange connection (6) is focused by a lens array (9) and reflected by a beam splitter (13) to an optical outlet (2) and that emission light coupled in from the optical outlet (2) passes through beam splitter (13). However, claim 42 recites the limitation of "a beam splitter for confocal division of an incoming beam path and an outgoing beam path, whereby outgoing and incoming light is passing said beam splitter or reflected by said beam splitter while being focused" and claim 43 recites the limitation of "a beam splitter for confocal division of an incoming beam path and an outgoing beam path, whereby incoming light is focused between said fiber optic array and said beam splitter" which were not described in the specification.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 22-33 and 35-43 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the fiber optical waveguide to the coupling connection.

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Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 22-31, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao (US 5,537,247) in view of Dixon *et al.* (US 5,192,980) and Qian *et al.* (Applied Optics 30:1185-1195, April 1991) in so far as understood.

In regard to claim **22**, Xiao discloses (Figs. 1 and 6) a fluorescence module (10) arrayed in an optical connection of a microscope (11) comprising:

- (a) a support body (10);
- (b) a coupling connection (55) disposed within said support body (10);
- (c) a pinhole array (50) comprising one pinhole disposed within said support body (10);

- (d) a detector (21 or 22);
- (e) a lens array (37 or 38) positioned between said pinhole (50) and said detector (21 or 22, respectively); and
- (f) a single mode fiber optical waveguide (23) attached to said coupling connection (55) for coupling in a stimulating light.

The fluorescence module of Xiao lacks that the lens array (37 or 38) is for focusing an emission light on said detector (21 or 22, respectively) and that the module (10) is used as a fluorescence correlation spectroscopy module. Dixon *et al.* teach (column 2, lines 20-53) that a pinhole with a detector behind the pinhole can be replaced by a small detector whose area is the same as that of the pinhole. Thus a small detector is equivalent to detector having a pinhole. Qian *et al.* teach (second paragraph on pg. 1186) it is known in the art that "Most FCS and FPR experiments are carried out on a standard epifluorescence microscope which is coupled to a laser in a confocal geometry". Therefore it would have been obvious to one having ordinary skill in the art to use the fluorescence module of Xiao as a fluorescence correlation spectroscopy module and to substitute an equivalent small detector for the detector having a pinhole so as to minimize the number of parts.

In regard to claims **23** and **24** which are dependent on claim 22, Xiao also discloses (Figs. 1 and 6) that light in module (10) travels along light path (82) both towards and from the objective (34) of the microscope (11) and that well known examples of microscope (11) are the Nikon Diaphot inverted microscope and the Nikon Optiphot 2 microscope (column 3, lines 38-42). It is well known in the art that a Nikon

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Diaphot inverted microscope comprises an access port (*i.e.*, optical connection) for attachment of modules. Thus, the optical connection of the microscope (11) is both an optical inlet or an optical outlet.

In regard to claim **25** which is dependent on claim 22, Xiao also discloses (Fig. 6) a collimator (30) for generating a parallel light beam that is disposed within said support body (10) in a beam path after said coupling connection (55).

In regard to claim **26** which is dependent on claim 25, Xiao also discloses (Fig. 6) an adjustable lens array (32) disposed within the beam path after said collimator (30) for focusing the beam path confocally with said pinhole (50).

In regard to claim **27** which is dependent on claim 22, Xiao also discloses (Fig. 6) that a filter array (44) and a dichroic beam splitter (41) both disposed within a beam path (80) before a beam within said beam path (80) is coupled into the microscope (11).

In regard to claim **28** which is dependent on claim 27, the fluorescence module of Xiao lacks that the filter array (*e.g.*, at least two frequency selective filter devices) and the beam splitter are set on the common receptacle holder removably inserted within the support body together. However, Xiao also discloses (column 5, lines 31-34) that dichroic beam splitters may be mounted on a sliding mechanism (*i.e.*, common receptacle holder) for selecting beam splitters having different spectral characteristics and (column 6, lines 19-25) that parameters of excitation filters, dichroic mirrors, and barrier filters are selected to minimize scattered light. Therefore it would have been obvious to one having ordinary skill in the art to provide beam splitters with associated filters in a removably inserted common receptacle holder (*i.e.*, sliding mechanism) in the

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fluorescence module of Xiao, in order to select a particular combinations of beam splitter with associated filters so as to minimize scattered light.

In regard to claims **29-31** which are dependent on claim 22, Xiao also discloses (Fig. 6) at least one optical unit comprising a dichroic beam splitter (42 or 43) or at least one mirror (column 6, lines 19-22) within an emission beam path (84) behind said pinhole (50).

In regard to claim **42**, Xiao in view of Dixon *et al.* and Qian *et al.* is applied as in claim 22 above. Xiao also discloses (Fig. 6) a beam splitter (41) for confocal division of an incoming beam path (82) and an outgoing beam path (82), whereby outgoing and incoming light is passing said beam splitter (41) or reflected by said beam splitter (41) while being focused.

In regard to claim **43**, Xiao in view of Dixon *et al.* and Qian *et al.* is applied as in claim 22 above. Xiao also discloses (Figs. 1 and 6) a beam splitter (41) for confocal division of an incoming beam path (82) and an outgoing beam path (82), whereby incoming light is focused (at aperture 55) between said fiber optical waveguide (23) and said beam splitter (41).

14. Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao (US 5,537,247) in view of Dixon *et al.* (US 5,192,980) and Qian *et al.* (Applied Optics 30:1185-1195, April 1991) as applied to claim 22 above, and further in view of Schalz (US 5,585,964) in so far as understood.

In regard to claim **35** which is dependent on claim 22, the modified fluorescence module of Xiao lacks a detailed description of the receptacle holder (*i.e.*, slider),

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characterized in that the support body (4) for receiving the receptacle holder (15) is provided with shaped surfaces (25), to which the receptacle holder (15) provided with complementarily shaped surfaces arrayed on the support body in the beam path can be fixed. Schalz teaches that holding elements (*i.e.*, sliders, carriers, or slide-in-modules; see column 2, lines 36-54) have " ... corresponding precision-stop-surfaces ... for the exact positioning of the holding element ... " (see also column 4, lines 21-23). Schalz also teaches that these holding elements are designed to contain optical elements such as fluorescence-dividing cubes with switching positions (column 2, lines 60-67). Therefore it would have been obvious to one having ordinary skill in the art to provide corresponding precision-stop-surfaces in the sliders of the modified fluorescence module of Xiao, in order to have exact positioning and alignment of the optical elements in the sliders as taught by Schalz.

In regard to claim **36** which is dependent on claim 22, the modified fluorescence module of Xiao lacks an explicit description of a connection flange for attaching the support body to the connection of the microscope and a support body which is made in one piece from a metallic material. Schalz teaches that modularly designed microscopes should be manufactured of metal such as aluminum or brass in a one-piece construction-type in order to increase rigidity (column 4, lines 1-25). Schalz also teaches that a modular microscope system makes it possible to attach modules (*i.e.*, support body) via precision attachment surfaces (*e.g.*, connection flange) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to manufacture the modified

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fluorescence module of Xiao as a metallic one-piece construction-type that can be attached to a precision attachment surface of a modular microscope, in order to have rigid module that can be attached to a microscope without additional alignment or optical adjustment as taught by Schalz.

In regard to claim **37** which is dependent on claim 22, the modified fluorescence module of Xiao lacks an explicit description that the support body is made with cavities for receiving the receptacle holder, wherein the said cavities have suitable lateral surfaces designed to accommodate the oriented reception of the receptacle holder. Schalz teaches that a carrier (*i.e.*, receptacle holder) has corresponding precision-stop-surfaces (*e.g.*, lateral surfaces of a cavity) for exact positioning (column 2, lines 46-59) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to provide cavities with corresponding precision-stop-surfaces in the modified fluorescence module of Xiao, in order to have exact positioning without additional alignment or optical adjustment as taught by Schalz.

In regard to claim **38** which is dependent on claim 37, Xiao is applied as in claim 28 above.

15. Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xiao (US 5,537,247) in view of Dixon *et al.* (US 5,192,980) and Qian *et al.* (Applied Optics 30:1185-1195, April 1991) as applied to claim 22 above, and further in view of Chande (US 4,844,574) in so far as understood.

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In regard to claim **39** which is dependent on claim 22, the modified fluorescence module of Xiao lacks the collimator (30) is tuned to the numerical aperture of the fiber optical waveguide (23). Chande teaches that the focal length (f_1) and clear aperture (*i.e.*, parallel light beam diameter D_1) of the collimator (108) must be selected in order to intercept the fiber emitted beam (column 3, lines 19-25). It is noted that the numerical aperture is defined as the sine of half the acceptance angle (*i.e.*, see θ_{EM} in Fig. 1 of Chande). Therefore it would have been obvious to one having ordinary skill in the art to match the focal length and clear aperture (*i.e.*, numerical aperture) of the collimator to the emitted beam angle (*i.e.*, numerical aperture) of the fiber in the modified fluorescence module of Xiao, in order to intercept and collect the fiber emitted beam as taught by Chande.

In regard to claim **40** which is dependent on claim 39, Xiao also discloses (column 8, lines 17-38; Fig. 6) frequency selective devices (45, 46) which choose different spectrum ranges of a set of emission wavelengths.

Response to Arguments

16. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,169,289 (White *et al.*) teaches (column 5, lines 6-

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15) it is well known in the art that a Nikon Diaphot inverted microscope comprises an access port for attachment of modules.

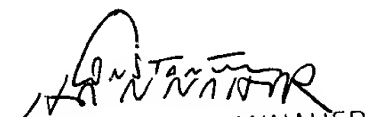
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860.

The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL
February 5, 2003


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878